REMARKS

Claims 1-19 are pending. Claims 15-19 have been withdrawn from consideration by the Examiner for being drawn to a non-elected invention. Applicants respectfully submit no new matter is presented.

Claims 1-14 Recite Patentable Subject Matter

Claims 1-7 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,874,051 to Heil et al. (Heil) in view of U.S. Patent No. 6,634,168 to Yamamoto and U.S. Patent No. 4,774,217 to Takeuchi et al. (Takeuchi). Claims 8-14 are rejected under 35 U.S.C. §103(a) as being unpatentable over Heil in view of U.S. Patent No. 4,175,107 to Iwaoka et al. (Iwaoka) and U.S. Patent No. 5,376,610 to Takahata et al. (Takahata). Applicants respectfully traverse both rejections.

Claims 1 and 8 each recite a device for carbon monoxide removal by selective oxidation including, among other features, a temperature controlling unit, an air introduction unit, and a gas mixing unit provided between carbon monoxide selective oxidation catalyst layers, wherein ***a reformed gas discharged from the temperature controlling unit is introduced into the air introduction unit***. The Office Action asserts Heil discloses "a carbon device (Fig. 1) for carbon monoxide removal by selective oxidation (Abstract) comprising: . . wherein a reformed gas discharged from the temperature controlling unit (6) is introduced into the air introduction unit (3)." *See* page 3, lines 7-8; page 5, lines 12-13; and page 7, lines 6-7 of the Office Action. Applicants respectfully submit the Office Action erroneously characterizes that which is taught by Heil.

Specifically, Applicants note reference number (6) of Heil identifies the cooling chamber as discussed in column 3, lines 50-64 of Heil. Coolant is introduced into the cooling chambers (6) through a coolant metering valve (7). See column 3, lines 51-53 of Heil. The coolant passed through the coolant chambers (6) is discharged from an unidentified valve as indicated by the arrows pointing upward in Figure 1 of Heil.

Reference number (3) of Heil identifies the inlet openings through which an oxidizing gas is added to the mixed gas stream. Metering devices (4) are provided at each of the inlet openings (3) to regulate or control the addition of oxidizing gas. See column 3, lines 28-38 of Heil.

Moreover, Applicants respectfully submit that in order for Heil to teach or suggest that which is erroneously asserted in the Office Action, i.e., that a reformed gas is discharged from the coolant chambers (6) and introduced into the inlets (3), Heil would have to show or suggest the coolant being discharged from the downstream end of the chambers (6) or some other portion of the chambers (6) were feeding the oxidizing gas to the inlets (3). However, Applicants note Heil fails to teach or suggest such a feature as Figure 1 of Heil clearly shows the valve (4) of the inlet (3) and the valve (7) of the chambers (6) as well as the valve (4) of the inlet (3) and the unidentified discharge valve at the downstream discharge valve of the chambers (6) are separate and distinct from each other and in no way is the oxidizing gas that is fed into the inlets (3) provided by the coolant chambers (6) or valves (7) thereof.

As is clear from the above, the coolant introduced into the coolant chambers (6) via the valves (7) is discharged from a downstream end of the chambers (6). At no point is any gas, coolant or other such element discharged from the coolant chambers

(6) and introduced into the oxidizing gas inlet openings (3) as erroneously asserted by the Office Action. In fact, Applicants note Heil lacks any teaching or suggestion that the coolant chambers (6) in any manner supply the oxidizing gas to the inlets (3). Applicants further note that the valves (7) of the coolant chambers (6) and the inlets (3) are not connected to each other wherein one feature would even be capable of supplying an oxidizing gas or coolant to the other.

As such, Applicants respectfully submit that any subsequent communication from the Patent Office which maintains a position that a reformed gas is discharged from the coolant chambers (6) and supplied or introduced into the inlets (3) identify ***exactly*** where Heil teaches or suggests such a feature as an exhaustive review of Heil by the Applicants has failed to uncover any such feature, let alone the suggestion of such a feature. Rather, Applicants respectfully contend that Heil appears to clearly teach that the coolant supplied to the coolant chambers (6) via the valve (7) is completely separate and distinct from the inlets (3) which receive the oxidizing gas therein.

Yamamoto fails to address or otherwise overcome the above described deficiencies in Heil.

Rather, Yamamoto discloses an exhaust gas purification system including at least one first upstream catalyst (10) including at least one selected from platinum, palladium and rhodium; and at least one second downstream catalyst (12) including platinum in an amount greater than that of the platinum of the upstream catalyst.

However, Yamamoto does not teach or suggest a temperature controlling unit, an air introduction unit, and a gas mixing unit being provided between carbon monoxide selective oxidation catalyst layers, ***wherein a reformed gas discharged from the***

temperature controlling unit is introduced into the air introduction unit, the reformed gas being discharged from the air introduction unit into the gas mixing unit, and the reformed gas discharged from the gas mixing unit being introduced into the carbon monoxide selective oxidation catalyst layers as a flow direction of the gas is from an upstream side to a downstream side of the carbon monoxide selective oxidation catalyst layers, and wherein a cooling medium flows in a direction crossing the flow direction of the gas in the carbon monoxide selective oxidation catalyst.

Takeuchi does not overcome or otherwise address the above-described deficiencies in Heil. Rather, Takeuchi merely teaches providing a higher catalyst density on a downstream side than an upstream side and does not teach providing a reactor between serially connected carbon monoxide selective oxidation catalyst layers.

Takeuchi does not teach or suggest a temperature controlling unit, an air introduction unit, and a gas mixing unit being provided between carbon monoxide selective oxidation catalyst layers, ***wherein a reformed gas discharged from the temperature controlling unit is introduced into the air introduction unit***, the reformed gas being discharged from the air introduction unit into the gas mixing unit, and the reformed gas discharged from the gas mixing unit being introduced into the carbon monoxide selective oxidation catalyst layers as a flow direction of the gas is from an upstream side to a downstream side of the carbon monoxide selective oxidation catalyst layers, and wherein a cooling medium flows in a direction crossing the flow direction of the gas in the carbon monoxide selective oxidation catalyst.

Iwaoka does not overcome or otherwise address the above-described deficiencies of Heil. Iwaoka discloses different embodiments of a catalytic exhaust gas purifying device in Figures 3, 5, and 7-13.

However, none of the embodiments of the catalytic exhaust gas purifying device described by Iwaoka teach or suggest a temperature controlling unit, an air introduction unit, and a gas mixing unit being provided between carbon monoxide selective oxidation catalyst layers, ***wherein a reformed gas discharged from the temperature controlling unit is introduced into the air introduction unit***, the reformed gas being discharged from the air introduction unit into the gas mixing unit, and the reformed gas discharged from the gas mixing unit being introduced into the carbon monoxide selective oxidation catalyst layers as a flow direction of the gas is from an upstream side to a downstream side of the carbon monoxide selective oxidation catalyst layers, and wherein a cooling medium flows in a direction crossing the flow direction of the gas in the carbon monoxide selective oxidation catalyst.

Takahata also does not overcome or otherwise address the above-described deficiencies of Heil. Rather, Takahata merely teaches providing an upstream catalyst layer with a shorter length relative to the entire catalyst length to control temperature in the upstream catalyst layer and maintain catalyst activity level downstream.

Takahata does not teach or suggest a temperature controlling unit, an air introduction unit, and a gas mixing unit being provided between carbon monoxide selective oxidation catalyst layers, ***wherein a reformed gas discharged from the temperature controlling unit is introduced into the air introduction unit***, the reformed gas being discharged from the air introduction unit into the gas mixing unit,

and the reformed gas discharged from the gas mixing unit being introduced into the carbon monoxide selective oxidation catalyst layers as a flow direction of the gas is from an upstream side to a downstream side of the carbon monoxide selective oxidation catalyst layers, and wherein a cooling medium flows in a direction crossing the flow direction of the gas in the carbon monoxide selective oxidation catalyst.

As stated above, none of the applied art of record, i.e., Heil, Yamamoto, Takeuchi, Iwaoka, and Takahata, alone or in combination, teaches or suggests a temperature controlling unit, an air introduction unit, and a gas mixing unit being provided between carbon monoxide selective oxidation catalyst layers, ***wherein a reformed gas discharged from the temperature controlling unit is introduced into the air introduction unit***, the reformed gas being discharged from the air introduction unit into the gas mixing unit, and the reformed gas discharged from the gas mixing unit being introduced into the carbon monoxide selective oxidation catalyst layers as a flow direction of the gas is from an upstream side to a downstream side of the carbon monoxide selective oxidation catalyst layers, and wherein a cooling medium flows in a direction crossing the flow direction of the gas in the carbon monoxide selective oxidation catalyst.

To establish *prima facie* obviousness, each feature of a rejected claim must be taught or suggested by the applied art of record. See M.P.E.P. §2143.03. As explained above, Heil, Yamamoto, Takeuchi, Iwaoka, and Takahata, alone or in combination, fail to teach or suggest each and every feature recited by Claims 1 and 8. Therefore, Applicants respectfully submit Claims 1 and 8 are not rendered obvious by the teachings of Heil, Yamamoto, Takeuchi, Iwaoka, and Takahata.

Accordingly, Applicants respectfully submit Claims 1 and 8 should be deemed allowable over Heil, Yamamoto, Takeuchi, Iwaoka, and Takahata for the reasons discussed above.

Claims 2-7 depend from Claim 1. Claims 9-14 depend from Claim 8. It is respectfully submitted that these dependent claims should be deemed allowable for the same reasons Claims 1 and 8 are allowable, as well as for the additional subject matter recited therein.

As such, Applicants respectfully request withdrawal of both rejections.

Conclusion

In view of the foregoing, reconsideration of the application, withdrawal of the outstanding rejections, allowance of the Claims 1-14, and the prompt issuance of a Notice of Allowability are respectfully solicited.

Should the Examiner believe anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

In the event this paper is not considered to be timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account No. 01-2300, **referencing docket number 107439-00063**.

Respectfully submitted,
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